

### Analytic Geometry Unit Review

1. For the line segment PQ, one endpoint is P (-2,-2) and the midpoint is M (-4, 1). Find the coordinates of the endpoint Q. **Answer (-6,4)**
2. Determine the equation of the perpendicular bisector of line EF, where E(-6,4) and F(-2,-4).  
**Answer**  $y = \frac{1}{2}x + 2$
3. Find the orthocenter of  $\triangle ABC$  if A(-5,4) B(-2,-3) C(1,4). **Answer**  $(-2, \frac{19}{7})$
4. A quadrilateral ABCD has vertices A(5,-2), B(4,-6), C(-3,-2), D(-2,2). Show that the diagonals **bisect** each other but are not perpendicular.
5. Determine the shortest distance from the line  $8x - 4y + 7 = 0$  to the point (1,2) **Answer**  $\frac{7\sqrt{5}}{20}$
6. Find the equation of the circle with points (4,1), (-3,7) and (5, -2).  
**Answer**  $(x + \frac{13}{2})^2 + (y + \frac{25}{6})^2 =$
7. The circle with centre (0,0) is  $x^2 + y^2 = 20$  has a chord AB where A is at (4, 2) and B is at (-2, 4). PQ right bisects AB at R. Check that the centre of the circle lies on the right bisector PQ.
8. An airplane at coordinates (150, 136), heading for Sudbury (0,0), has to be diverted because of poor weather conditions to either North Bay (85, -10) or Timmins (-15, 155). If the plane is carrying enough gasoline to reach Sudbury will it be able to reach both North Bay and Timmins.  
**Answer: The plane can reach either Timmins or North Bay**
9. Will these circles intersect? At how many points?  $(x-2)^2 + (y-3)^2 = 16$  and  $(x+3)^2 + (y+1)^2 = 25$   
**Answer: Yes @ 2**
10. Find the coordinates of the points that are one-third and two thirds away from A(1,7) to B(10,4). **Answer (4,6) & (7,5)**